graphic disturbance will be at the maximum with SW. winds. On the other hand the building then lies on the lee side and the building disturbance becomes unnoticeable. Toward WSW.-NNW. winds the peak presents a slope that is considerably less steep, and the orographic disturbance becomes very small. On the other hand the building now lies to the windward and the building disturbance can become quite marked.

VI. SIGNIFICANCE OF RESULTS

In conclusion something may be said relative to the significance of the results. One who is not a meteorologist will very properly raise the question: Have these pressure differences of 1 to 2 mm.—that is, 2 to 4 per cent of error in observation—really such significance that a paper such as this should be devoted to them? The meteorologist will answer in the affirmative on these grounds.

1. The investigation gives for the first time a measure of the accuracy of air pressure determination and shows that building and orographic disturbances in the cases here cited can amount to twenty to thirty times the probable error in daily observations.

2. Building and orographic disturbances have the appearance of indications of a pressure tendency in the undisturbed field (the free air) which can be opposite to the true pressure tendency. This knowledge is of significance in the explanation of meteorological processes.

3. At present pressure observations at mountain and valley stations are used to determine the mean temperature of the air column below the mountain station. (Case c.) Now on the Schneekoppe an error of 1 mm. in the pressure measurement—and this frequently occurs—corresponds to an error of 3° C. in mean temperature. That this is a rather large value is learned from the fact that through more than a decade there was carried on a controversy as to whether or not the temperature on a mountain peak is 1° to 2° C. lower than the temperature in the free atmosphere at the same elevation; that is, whether or not the mean temperatures of the columns of air differ from each other by 0.5° to 1.0° C.

Herewith there is adduced proof that considerable significance attaches to the results.

THUNDERSTORMS IN THE LOS ANGELES DISTRICT

By CHARLES CLIFFORD CONROY, Ph. D.

(Author's abstract)

Since January 1, 1884, 164 days with thunderstorms have been noted in Los Angeles, and 52 others have been recorded in the immediate vicinity. The monthly distribution of these storms is interesting. March is the month of greatest frequency, followed in turn by April, January, September, February, May, August, July, June, October, November, and December. Seasonally, the minimum belongs to the last three months of the year. There is a secondary minimum in June, and a secondary maximum in late August and September. By 3-month periods, January, February, and March, have 36.5 per cent of all the storms; April, May, and June, 26.2 per cent; July, August, and September, 24.5 per cent, and October, November, and December, 12.8 per cent. The first half of the calendar year has 62.2 per cent, and the second half has 38.8 per cent.

The hourly distribution shows a maximum at 3 p. m., and a minimum at 6 a. m. There is a secondary maximum at 3 a. m., a fact somewhat suggestive of oceanic influence. The yearly numbers of storms vary from 10 in 1919 to none in 1891 and 1915. Periods of pronounced frequency occurred in the four years 1905–1908, the three years 1918–1920, and in 1926–27. On the other hand, no thunderstorms at all were recorded from January 27, 1914, to September 30, 1916. The data at hand furnish no conclusive evidence of any progressive numerical increase of thunderstorm activity in the Los Angeles area. Nor is there any evidence of a relationship of local thunderstorm frequency to the sunspot period.

Three types—not mechanical, but types of occurrence—may be distinguished: that of the winter, when the thunderstorm takes place at the end of a pronounced disturbance, and along a windshift line, or when local convection occurs during a heavy winter rain. A second type depends upon the presence of a low-pressure area whose center is on or near the Mexican line. Los Angeles is then at or near the northern limit of such areas, and the barometer is unsteady. The third, or summer type, depends upon the well-known "Sonora" condition, and is especially evident when the center of the Colorado River "low" is somewhat northwest of its usual place and when a second "low" is mapped over Oregon or southwestern Idaho. The temperature and humidity are often quite high, even after the storm.

Of the entire list of 164 thunderstorm days, only some 20 afforded fairly severe storms, and only one—or rather the series of storms on June 30–July 1, 1918—can be described as violent. Some minor damage has been recorded in the city twenty-five times. Of late years, however, petroleum tanks have been struck and destroyed in different parts of California, and this is at present the principal problem in the prevention of destructive effects.